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GRIMM ALFALFA.

According to the account published by the Bureau of Plant Industry in Bulletin No. 209, Grimm alfalfa was introduced into this country in 1857 by Wendelin Grimm, an immigrant from Baden, Germany. The original introduction consisted of less than a half bushel of seed, which was sown by Mr. Grimm in 1858 on his farm in Carver County, Minn. Opinions seem to differ as to the hardiness of the original lot of seed. However, its progeny contained many individuals which were sufficiently hardy to withstand the severe winters to which they were subjected. Careful investigations pretty definitely indicate that Grimm alfalfa owes its superior hardiness to the fact that it is the result of a natural cross between the common variety and the yellow-flowered alfalfa (*Medicago falcata*), and that by virtue of its being exposed to numerous severe winters the weaker plants were eliminated, leaving only the hardy ones to perpetuate the strain.

Grimm alfalfa does not differ materially in appearance from the ordinary strain, so that the casual observer has difficulty in distinguishing one from the other. While a large percentage of its flowers are of the same color as those of common alfalfa, there are some that represent many shades of violet, yellow, and other hues. The taproots show a tendency to branch, and the crowns are inclined to be low set and spreading. These characters of the crown are undoubtedly of great importance in rendering a variety resistant to cold, as they afford protection to the buds which produce the new shoots.

Grimm alfalfa is one of the hardiest, if not the most hardy, of our commercial strains. It is recommended for the northern portions of the Great Plains region and parts of the Northwest where the winters are especially severe and where little protection is given by snow. In sections where winterkilling is not an important consideration, it is not thought to be materially superior to common alfalfa, and in some cases it is not quite equal to that variety in point of yield. It possesses, however, the advantage of starting earlier in the spring than common alfalfa, and, as a consequence, usually has more moisture upon which to make the first crop. This normally insures one good cutting, which is a very important consideration in the dry, short-season sections where subsequent cuttings can not be depended upon.

When this variety first began to attract attention its seed was produced entirely in Minnesota, but as conditions are not favorable for seed production in that State stock seed was sent to Montana and other States farther west in order that the available supply might be more rapidly increased. Tests of the true variety grown in Dakota, Montana, and Idaho indicate that these lots are all of equal value and are quite as hardy as those grown in Minnesota. The supply of seed has been very limited and the seed has always commanded a high price. For this reason unscrupulous dealers have offered for sale large quantities of the seed of common alfalfa under the name of Grimm, and on account of this practice it is highly desirable that each prospective purchaser take every means possible to learn whether seed is true to name before purchasing.

Preparation for seeding.—Grimm alfalfa requires practically the same soil and culture as ordinary alfalfa, i. e., it requires a fertile soil and a well prepared seed bed. Since spring seeding is usually practiced throughout the area discussed in this circular, it is advisable in most cases to plow the ground which is to be seeded to alfalfa during the preceding fall, leaving it rough in order to hold the snow and prevent blowing. One of the chief advantages of fall plowing is that it permits the ground to become thoroughly settled before the time of seeding. If alfalfa is to be seeded on land that has been in corn or potatoes, plowing in the fall is not necessary. Such ground can be put into excellent condition for seeding by thoroughly disking and harrowing in the spring. Ground that has been plowed in the fall should be given repeated diskings and harrowings in the spring until the subsurface has been well settled. This treatment also induces the germination of weed seeds and destroys many of the weed seedlings.

Inoculation.—Unless the ground has recently grown alfalfa, it is usually advisable to inoculate it with nitrogen-fixing bacteria. This can be done by scattering over the area to be seeded soil from a field upon which the crop has been previously grown successfully. From 300 to 500 pounds per acre are usually sufficient and should be harrowed in immediately upon application to prevent injury to the germs by the action of the sunlight. Another method which is also used is that of inoculating the seed with an artificial culture, which can be secured free of charge from the United States Department of Agriculture. Full directions for use accompany each bottle of the culture.

There is generally no advantage to be gained by seeding alfalfa in the section here referred to before the middle of May, and in a majority of cases seeding early in June gives entirely satisfactory results.

Seeding.—Whether alfalfa seed should be sown with a nurse crop is a question upon which there is some difference of opinion. In general, however, a nurse crop is a detriment and does not furnish the help that it is intended to give. The chief advantage of a nurse crop is that it is a substitute for weeds, and on land that is very foul its use is sometimes advised. Barley is probably the best crop to use for this purpose, and in all cases it should be seeded lightly and cut for hay rather than for grain.

The use of the press drill is advised in preference to the broadcast method of seeding, since by the use of the former a uniform stand is more certain to be secured. However, if the drill is not available, a wheelbarrow seeder or one of similar type can be used quite satisfactorily. From 10 to 15 pounds of good seed are ample for sowing 1 acre, and on thoroughly prepared land no advantage is gained in using a greater quantity. The seed should be covered evenly but not deeper than 1½ inches in light soil; in clay soils one-half of this depth is sufficient.

Cultivation of old fields.—There is not sufficient evidence regarding the value of cultivating broadcast fields to warrant definite recommendations. However, disking and harrowing should be tested thoroughly, leaving in each case a portion of the field untreated to serve as a check on the cultivated area. The spike-tooth harrow appears to give good results for the first and possibly the second season. After this the use of a disk harrow or some type of renovator is probably more satisfactory. Severe treatment should not be given, as it injures the crowns of the plants and promotes the introduction of disease.

Seeding in rows.—In the region to which this circular applies alfalfa can be grown to advantage in cultivated rows, either for seed or hay production, especially under conditions of low rainfall. For seeding in this manner the preparation of the seed bed is practically the same as for broadcast seeding. The only difference is that the seed is sown in rows, preferably 36 to 42 inches apart, rather than in close drills. The press drill is probably the best implement for seeding in wide rows, since by blocking up certain of the holes it can be made to seed in rows the desired distance apart.

Light rollers, 15 to 18 inches in diameter and approximately 20 inches long, can be used to follow in the row seeded by the drill in order to slightly compact the soil and give the seed the necessary covering. These rollers can be made from lumber on the farm and attached to the drill in a frame. They are much more satisfactory than chains or the ordinary press wheels for covering the seed. From 1½ to 2 pounds of seed are sufficient when drilling in rows 36 or 42 inches apart, since, if the stand is thick in the row, little advantage is obtained over the broadcast method of seeding. A thick stand can not be easily thinned; neither can an uneven stand be satisfactorily remedied. Hence, the desirability of a uniform thin stand in the beginning. On land that is inclined to be weedy, a small quantity of millet seed should be mixed with the alfalfa seed, as the millet seed germinates quickly and marks the rows for the first cultivation. Frequent cultivation should be given the field after the plants are well started, in order to conserve moisture and to keep down the weeds. Until the alfalfa has made a heavy growth the weeder can be used to good advantage; after this an ordinary cultivator or weed cultivator is a more satisfactory implement. Care should be taken not to ridge the plants any more than is absolutely necessary, flat cultivation being highly desirable. At least three cultivations are recommended in ordinary seasons.

The growing of alfalfa in rows does not materially interfere with the cutting of the crop for hay, and the farmer who has not tested this method will be surprised at the increase in yield over an ordinary broadcast field under conditions of low rainfall. For the production of seed this method is not only more certain to produce a crop, but will invariably give a larger yield than a broadcast stand, since it affords better moisture conditions, more light to the individual plant, and doubtless other favorable conditions that are not well understood.

Suggestions.—If further information is desired, the following publications, which will be mailed by the Department of Agriculture free upon application, discuss the various subjects contained in this circular in much detail, and it is suggested that those who are interested apply for them at once: Farmers' Bulletins Nos. 339, Alfalfa; 495, Alfalfa Seed Production; and Bureau of Plant Industry Circular No. 24, Alfalfa in Cultivated Rows in Semiarid Regions.

R. A. OAKLEY,
Agronomist.

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